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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/659,168	09/10/2003	Joy Sawyer Bloom	AD6929 US NA	3753
23906	7590	09/19/2005	EXAMINER	
E I DU PONT DE NEMOURS AND COMPANY LEGAL PATENT RECORDS CENTER BARLEY MILL PLAZA 25/1128 4417 LANCASTER PIKE WILMINGTON, DE 19805			HON, SOW FUN	
			ART UNIT	PAPER NUMBER
			1772	

DATE MAILED: 09/19/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

10/659,168

Applicant(s)

BLOOM, JOY SAWYER

Examiner

Sow-Fun Hon

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 25 August 2005.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-13 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-10 and 12 is/are rejected.
- 7) ☒ Claim(s) 11,13 is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date _____.
- 4) ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____.
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: _____.

DETAILED ACTION

Continued Examination Under 37 CFR 1.114

1. A request for continued examination under 37 CFR 1.114, including the fee set forth in 37 CFR 1.17(e), was filed in this application after final rejection. Since this application is eligible for continued examination under 37 CFR 1.114, and the fee set forth in 37 CFR 1.17(e) has been timely paid, the finality of the previous Office action has been withdrawn pursuant to 37 CFR 1.114. Applicant's submission filed on 8/25/05 has been entered.

Response to Amendment

Withdrawn Rejections

2. The 35 U.S.C.102/103 rejections, and objections in the Office action dated 05/26/05 are withdrawn due to Applicant's amendment dated 08/25/05.

New Rejections

Claim Rejections – 35 USC § 102

The text of those sections of Title 35, U.S. Code not included in this action can be found in a prior Office action.

3. Claims 1-4, 12 are rejected under 35 U.S.C. 102(b) as being anticipated by Tsutsumi (US 5,312,866).

Regarding claims 1, 4, Tsutsumi teaches a composition comprising a liquid crystalline polyester (LCP) (polyester resin which is a thermotropic liquid-crystal

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polymer, column 4, lines 40-50) as a matrix material (50 % by weight of polyester resin, column 3, lines 65-70), having a melting temperature of greater than 399 °C (can form an anisotropic molten phase at a temperature of 420 °C, column 4, lines 42-50), containing at least two lubricating fillers (one or more additives, column 18, lines 5-10) selected from the group consisting of graphite, carbon fiber, molybdenum disulfide, mica, silicone, potassium titanate, aramid(e, column 18, lines 5-10), PTFE, boron nitride (column 20, lines 29-31), clay, talc (column 20, lines 45-50), and combinations thereof.

A chemical composition and its properties are inseparable. If the prior art teaches the identical chemical structure, the properties applicant discloses and/or claims are necessarily present. See MPEP 2112.01. Tsutsumi teaches that the liquid crystalline polyester material has repeat units derived from 4-hydroxybenzoic acid (structural unit formula (V), column 16, lines 40-45), 4,4'-biphenol (structural unit formula (VI), column 16, lines 46-51), terephthalic acid (structural unit formula VII, column 16, lines 52-56) and 2,6-naphthalenedicarboxylic acid (structural unit formula VIII, column 16, lines 57-62) (original claim 3) and that it has an anisotropic molten phase at a temperature of 420 °C (column 4, lines 42-50). Therefore the liquid crystalline polyester is expected to have a wear resistance of at least 1.75 MPa-m/s (50,000 psi-fpm).

Regarding claim 2, Tsutsumi teaches that the liquid crystalline polyester material can comprise 50 % by weight (column 3, lines 65-70), which is within the claimed range of 45 – 95 % by weight.

Regarding claim 3, Tsutsumi teaches that the liquid crystalline polyester material has repeat units derived from 4-hydroxybenzoic acid (structural unit formula (V), column

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16, lines 40-45), 4,4'-biphenol (structural unit formula (VI), column 16, lines 46-51), terephthalic acid (structural unit formula VII, column 16, lines 52-56) and 2,6-naphthalenedicarboxylic acid (structural unit formula VIII, column 16, lines 57-62).

Claim 4 has been discussed above.

Regarding claim 12, Tsutsumi teaches that an article is made from the composition (column 2, lines 60-70).

Claim Rejections - 35 USC § 103

The text of those sections of Title 35, U.S. Code not included in this action can be found in a prior Office action.

4. Claims 5-10 are rejected under 35 U.S.C. 103(a) as being unpatentable over Tsutsumi as applied to claims 1-4, 12 above.

Tsutsumi teaches a composition which comprises a liquid crystalline polyester as a matrix material, having a melting temperature of greater than or equal to 399 °C and a wear resistance of at least 1.75 MPa-m/s (50,000 psi-fpm), and contains at least two lubricating fillers, as described above.

Regarding claims 5, 7, 9, Tsutsumi teaches that the lubricating filler (solid lubricant of graphite, molybdenum disulfide, column 20, lines 27-30) can be in the amount of 1 part by weight for 100 parts by weight of the sum of the matrix materials (polyimide resin and thermotropic liquid crystal polymer, column 20, lines 27-35), and that the composition contains at least two lubricating fillers (one or more additives, column 18, lines 5-10) are selected from the group consisting of graphite, carbon fiber,

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molybdenum disulfide, mica, silicone, potassium titanate, aramid(e, column 18, lines 5-10), PTFE, boron nitride (column 20, lines 29-31), clay, talc (column 20, lines 45-50), and combinations thereof. Therefore, because Tsutsumi teaches that the composition can contain at least two lubricating fillers, and that the lubricating filler can be in the amount of 1 part by weight for 100 parts by weight of the sum of the matrix materials, it would have been obvious to one of ordinary skill in the art at the time the invention was made, to have formulated a composition of Tsutsumi which comprises a first filler within the claimed range of 1-20% by weight, a second filler within the claimed range of 1-20% by weight, a third filler within the range of 1-20% by weight, and a fourth filler within the claimed range of 0-15% by weight, in order to obtain the desired combination of lubricating and filling properties.

Regarding claim 6, because Tsutsumi teaches that the composition contains at least two lubricating fillers (one or more additives, column 18, lines 5-10) are selected from the group consisting of graphite, carbon fiber, molybdenum disulfide, mica, silicone, potassium titanate, aramid(e, column 18, lines 5-10), it would have been obvious to one of ordinary skill in the art at the time the invention was made, to have formulated a composition wherein the first filler is a graphite material, and the second filler is a carbon fiber material, in order to obtain the desired lubricating and filling properties provided by the graphite material and carbon fiber material.

Regarding claim 8, because Tsutsumi teaches that the composition contains at least two lubricating fillers (one or more additives, column 18, lines 5-10) are selected from the group consisting of graphite, carbon fiber, molybdenum disulfide, mica,

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silicone, potassium titanate, aramid(e, column 18, lines 5-10), and that the lubricating filler (solid lubricant of graphite, column 20, lines 27-30) can be in the amount of 1 part by weight for 100 parts by weight of the sum of the matrix materials (polyimide resin and thermotropic liquid crystal polymer, column 20, lines 27-35), it would have been obvious to one of ordinary skill in the art at the time the invention was made, to have formulated a composition wherein there is a first filler within the claimed range of 1-20% by weight, a second filler within the claimed range of 1-20% by weight, and a third filler within the range of 1-20% by weight, wherein the third filler is specifically a mica material, in order to obtain the desired combination of lubricating and filling properties which includes the specific properties provided by the mica material.

Regarding claim 10, Tsutsumi does not teach particulate polyimide, which meets the lower end of the claimed range, 0 % by weight as recited by claim 9, upon which claim 10 depends.

Allowable Subject Matter

5. Claims 11, 13 are allowed. Applicant is advised to review the suggested revised language of independent claim 11 below.

The closest prior art US 5,312,866, even in combination with US 5,969,083, fails to teach or suggest the specific composition which comprises about 65 % by weight of liquid crystalline polyester material having an onset of melting temperature of greater than 320 °C, and contains four fillers wherein said fillers comprise (A) about 10 % by weight of graphite; (B) about 10 % by weight of carbon fiber; (C) about 5 % by weight of

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mica; and (D) about 10 % by weight of particulate polyimide, wherein the composition has an onset melting temperature of at least 320 °C and wear resistance of at least 1.75 MPa-m/s (50,000 psi-fpm). Applicant demonstrates that the specific composition recited shows unexpected results in terms of wear resistance performance (Applicant's specification, page 11).

Response to Arguments

6. Applicant's arguments with respect to claims 1-12 have been considered but are moot in view of the new ground(s) of rejection.

Any inquiry concerning this communication should be directed to Sow-Fun Hon whose telephone number (571)272-1492. The examiner can normally be reached Monday to Friday from 10:00 AM to 6:00 PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Harold Pyon, can be reached on (571)272-1498. The fax phone number for the organization where this application or proceeding is assigned is (571)273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should

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you have questions on access to the Private PAIR system, contact the Electronic

Business Center (EBC) at 866-217-9197 (toll-free).

S. Hon.

Sow-Fun Hon

09/02/05

[Signature]
HAROLD PYON
SUPERVISORY PATENT EXAMINER
1772

9/6/05